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Ups and Downs of Baking Powders

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Alumnae Echoes . . .

. . . news bits from the front lines

Edited by Carmen Hensel

'twenty-three

Jessie Bourland Monroe of Rock Island, Ill., was severely burned when a kitchen stove exploded as she was preparing breakfast recently. Her two children, Robert and Joyce, died as a result of burns received and Mrs. Monroe was reported to be in a very serious condition.

'twenty-seven

Marie Graham Diton is in charge of the laboratory teaching of dietetics and dietotherapy for student nurses at Harper Hospital, Detroit, Mich.

Harriett C. Brigham, M. S., is now Home Service Director for the Oklahoma Gas and Electric Company. Miss Brigham was an instructor for one year in the Household Equipment Department at Iowa State. Last year she was employed in the education department of the Frigidaire Corporation.

'twenty-eight

Frances Jones was married to Charles E. Farnsworth on Tuesday, Dec. 30. Before her marriage, Mrs. Farnsworth had been head of the Nursery School at Vassar College. Mr. Farnsworth is assistant professor in the School of Forestry at Syracuse University at Wanakena, N. Y. He is also an alumnus of Iowa State.

Winifred Mighells Mathews is taking graduate work this quarter. Her husband is teaching on the staff of the farm management short course. They were married last summer and have lived on a farm near Danville, Ill.

Gertrude Bekman has a position as home advisor in Madoupin County, Ill. She has been employed as an instructor in the high school since her graduation.

Martha Jane Moffett will enter the California Lutheran Hospital, instead of the University Hospital, for dietetics training on Feb. 1.

'thirty

Jean Millard is spending six weeks in California. She journeyed to California via Arizona and Old Mexico. She will spend most of the time in San Francisco.

Ellen Palmerlee is doing interesting work in the Infant Welfare Society in Chicago. She is employed as a nutritionist. Since she began work there last fall she has been stationed at various units throughout the city. The Infant Welfare work is divided into many units. Each of these units is stationed in a definite district in the city. Miss Palmerlee visits the homes of the people and helps them with their problems in child nutrition. She suggests the sort of food they buy and sees that certain necessities are provided. Each worker has bi-weekly conferences with the people whom she visits to help them with their particular problems. Miss Palmerlee is very interested in her work there.

Katherine M. Stewart has accepted a position as home demonstration agent in Chester County, Pennsylvania. Her headquarters are at West Chester. She began work Jan. 1. Miss Stewart has just completed her hospital dietetics training at the Wesley Memorial Hospital, Chicago.

Dorothy Ingersoll was married during the fall to Bernie Klopstead of Sioux City. The ceremony was performed at the home of Mrs. Klopstead's parents in Cedar Rapids. Mr. and Mrs. Klopstead will make their home in Sioux City, Iowa. Mr. Klopstead is a former student of Iowa State.

Erma Plum is teaching at Lawton, Iowa. During the fall quarter she did graduate work at Iowa State.

Christine Phelps has accepted a position as assistant to Mrs. Leone Carroll of the Jewel Tea Company, with offices at Barrington, Ill. She has recently been employed in the linen department at the Marshall Field and Company store.

Ups and Downs of Baking Powders

By Emily Conklin

"I'M forever blowing bubbles. . . " gloats the can of baking powder as it watches from the shelf while Madame mixed up a cake, sure that it will soon be getting all puffed up in the comfortable heat of the oven. And now, if we are honest with ourselves, we will put aside our "know it all" attitude and ask—just what is it about baking powder that raises our cakes? Why do some powders raise them more than others? Why does much stirring affect some powders and not others? Why do we like the taste given by some and dislike that produced by others? And just how and when should we put the baking powder into the cake mixture?

If you take down from the shelf a can of baking powder, you will find written on it, its chemical pedigree. Sodium aluminum sulfate, tartrate salts and phosphate salts are the three families of baking powders which are at present on the market. Each, of course, has its familiar commercial name.

The tartrate powders contain both tartaric acid and cream of tartar. The tartaric acid reacts completely in cold water and therefore its leavening power is lost unless the product is put into the oven immediately after the powder has been added. It also readily loses its leavening power after being exposed to air. To supplement the tartaric acid, the cream of tartar is added. It reacts more slowly in cold water and doesn't lose its leavening power.

The acid salt used in the phosphate baking powder has a great affinity for moisture and therefore will not keep long.

The aluminum baking powders now on the market contain both aluminum and phosphate salts. These acids have first class keeping qualities and have a leavening power corresponding to that of the tartaric powders.

Have you ever blown soap bubbles? If you have, you know that when air is blown through the pipe into the soap and water mixture, bubbles of all sizes drift off into the air.

Baking powders also form "soap bubbles" when mixed with the batter of a cake, but the bubbles given off by the baking powders are evolved without any blowing and are filled with carbon dioxide instead of air. This gas, carbon dioxide, instead of passing out into the air, pushes its way among the particles of the cake and causes the batter to rise. It remains in the cake until the structure is baked to such a degree that it will hold itself up, then passes out into the atmosphere—its work in the cake completed.

When the baking powder is added to liquid, each little grain of baking powder joins with a particle of liquid and the two together pop off, like all the hundreds of other kindred particles, to form a little gas bubble which, with all the

others, pushes the cake up until it can see over the edge of the pan. If too many baking powder grains (or as we generally say—too many teaspoons) are added to the cake batter, they will push it up so high that the structure of the cake will not be able to hold itself up and the cake will fall. On the other hand, if too few are added they won't be strong enough to raise the cake and it will be soggy and heavy.

Anyone can demonstrate this popping off progress for his own benefit by putting some baking powder in a glass with a little liquid. The bubbles will appear immediately and as the solution is heated they will form even more rapidly until all the gas has escaped into the air. Try out your baking powder in this way, watching carefully the rapidity with which the gas evolves. You may thus determine the best method of mixing the batter to avoid losing any of the leavening power of the baking powder.

It is harder, however, for gas bubbles to escape from a dough than from water because of the viscosity or thickness of the dough. Hence the bubbles are held in a cake dough unless liberated by overstirring after the addition of the powder. This must especially be avoided in the case of rapid action baking powders. However, if the dough is not stirred, it may be allowed to sit for some time before baking and little gas will be lost.

Certain types of baking powder now on the market have double action; that is, they contain some acids which will combine with cold liquids to give off gas and others which produce gas only when the liquid is hot. This type holds a distinct advantage over the type which reacts only with cold liquid, since even though all the gas produced by the cold liquid acid has escaped from the batter before it reaches the oven, the gas later evolved by the hot liquid acid would still be able to raise the cake.

If a cake is put into an oven which is so hot that a crust is formed before the gas bubbles have had time to evolve, the crust will be broken as these bubbles form and the cake rises and will leave cracks across the surface. On the other hand, an oven which is too cool will allow the gases to escape from the cake before the crust is formed to hold them in. A moderate oven in which both processes —gas forming and crust forming—are going one at the same time, is the most desirable.

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WOI Homemaker Half Hours

Tuesday, Jan. 20. "Outdoor Play at the Nursery School," Lydia Swanson, Child Development Department.
"Books for Children's Reading," Mrs. Alma H. Jones, Extension Specialist, Child Care and Training.
Thursday, Jan. 22. "How Honey Is Prepared for the Housewife," Prof. F. B. Paddock, State Apiarist.
"Afternoon Naps at the Nursery School," Doris Erwin, Child Development Department.
Tuesday, Jan. 27. "Music in the Nursery School," Frances Sandell, Child Development Department.
"Budgets and Weekly Wages," Helen Bishop, Head, Home Management Department.
Thursday, Jan. 29. "Ultra-Violet Light from Artificial Sources," Russell D. Miller, Physics Department.

Ups and Downs of Baking

(Continued from page 13)

If the cake is over-beaten before being put into the oven to bake, the gluten in the flour will be developed and the gas bubbles will not be able to distribute themselves evenly throughout the cake, but will follow along the tough strands of gluten, forming little tunnels or runways in the cake for the passage of bubbles and steam.

A batter with the following proportions which contains a phosphate or tartrate baking powder, will lose its volume if beaten more than approximately 150 strokes, for the powders will react with the cold liquid and the over-amount of beating will force out the gases which have been formed:

1 cup milk
1 cup sugar
3 cups flour
½ cup fat

Many other cakes with phosphate or tartrate powders are made better if stirred 300 or even up to 1,000 times.

Soda reacts with cold liquid in the same way as does a single action baking powder, therefore it should be treated in the same manner. If it is dissolved in cold water before it is added to the batter, some of the gas will be formed and pass out into the air and be lost. The practice of dissolving soda in water holds over from the time when soda refining processes were not developed and the soda was sold in rather large crystaline lumps. Then it was necessary to dissolve the crystals so they could be distributed evenly throughout the batter. But now the soda as we buy it is refined in such a manner that we can add it to the flour just as we add baking powder, without any fear of poor distribution.